Office Action Summary	Application No.	Applicant(s)	
	09/731,799	DEGUCHI, MASAHIRA	
	Examiner	Art Unit	
	Thomas H. Stevens	2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12/08/00 and 08/05/02* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12/08/00* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☒ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *3* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Drawings

1. The following drawings are objected to under 37 CFR 1.83(a) because they fail to show the following conditions as described in the specification. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing MPEP § 608.02(d). For example:

- **Claim 13:** The process of generating a pseudo shape is not mentioned directly in drawings.
- **Claim 16:** The process of detecting one or more shapes in not mentioned directly in the drawings.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

3. The claims are generally narrative and indefinite, failing to conform to current U.S. practice. They appear to be a literal translation into English from a foreign document and are replete with grammatical and idiomatic errors. For example: **Claim 5:** "of the one shape" perhaps should say "into one shape".

4. Claims 2,5,8,9 and 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention:

Claim 2: "unnecessary"-vague and indefinite.

Claim 8: "arrangement plane"--indefinite.

Claim 9: "pattern shapes"—indefinite.

Claim 12: "as necessary"—indefinite.

5. Claims 1-16 are rejected under 35 U.S.C. 112, second paragraph as being ambiguous based the claims claiming an apparatus and a process. For example claim 1 states an apparatus and a process: *A model optimization* ***apparatus,*** *comprising: a detection unit* ***detecting one or more redundant shapes from a plurality of shapes forming a*** *three-dimensional model of an object a deletion unit deleting shape information relating to the one or more redundant shapes; and a construction unit* ***reconstructing a three-dimensional model of the object according to remaining shape information.***

Claim Rejections - 35 USC § 101

6. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-16 are rejected under 35 U.S.C. 101 because based on the theory that the claim is directed to neither an "apparatus" nor a "process," but rather embraces or overlaps two different statutory classes of invention set forth in 35 U.S.C. 101 which is drafted so as to set forth the statutory classes of invention in the alternative only. *Id.*at *1551.*

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1,3-16 are rejected under U.S.C. 102(b) as being anticipated by Ji et al. (Thesis: 1997). Ji et al discloses various methodologies to overcoming integration barriers between design and process planning by 3-D CAD data design. Specifically, this paper discloses the numerous arithmetic approaches that encompass the latter techniques of geometric modeling and representation schemes (Abstract). In specific:

Claim 1: *A model optimization apparatus, comprising: a detection unit detecting one or more redundant shapes from a plurality of shapes forming (pg. 286, column 1, paragraph 3, line 7) a three-dimensional model of an object (pg. 270, column 1,section 2.1, line 3); a deletion unit deleting shape information relating to the one or more redundant shapes (pg. 286, column 1, paragraph 3, lines15-18) and a construction unit reconstructing a three-dimensional model of the object according to remaining shape information (pg. 286, column 1, paragraph 3, lines 20-23).*

Claim 3*: The apparatus according to claim 2, wherein: said detection unit detects two shapes having same outline information and offsetting each other (pg. 286, column 1, paragraph 3, lines 1-23); and said deletion unit deletes the two shapes.*

Claim 4: *The apparatus according to claim 2, wherein: said detection unit detects two shapes having different outline information and offsetting each other (pg. 301, column 2, lines 1-20); and said deletion unit deletes the two shapes.*

Claim 5: *The apparatus according to claim 1, wherein: said detection unit detects two or more shapes which can be represented by one shape from the plurality of shapes; and said deletion unit integrates shape information*

of the two or more shapes into shape information of the one shape (pg 287, figure 13).

Claim 6: *The apparatus according to claim 5, wherein: said detection unit detects two shapes having same sectional shape information; and said deletion unit deletes shape information of one of the two shapes, amends shape information of the other shape, and integrates shape information of the two shapes into shape information of one shape (pg. 287, column 1, lines 2-10).*

Claim 7:*The apparatus according to claim 5, wherein: said detection unit detects two shapes having same height information (pg. 287, figure 13); and said deletion unit deletes shape information of one of the two shapes, amends shape information of the other shape, and integrates shape information of the two shapes into shape information of one shape.*

Claim 8: *The apparatus according to claim 5, wherein: said detection unit detects two or more shapes having same arrangement plane information and same height information; and said deletion unit amends shape information of one of the two or more shapes (pg. 288, figure 14(a)) deletes shape information of other shapes, and integrates shape information of the two or more shapes into shape information of one shape.*

Claim 9: *The apparatus according to claim 5, wherein: said detection unit detects two or more shapes defined as pattern shapes; and said deletion unit amends shape information of one of the two or more shapes, deletes shape information of other shapes, and integrates shape information of the two or more shapes into shape information of one shapes (pg. 273, column 2, lines 29-47; and pg. 274, column 1).*

Claim 10: *The apparatus according to claim 1, wherein: said detection unit comprises: a deletion target storage unit for storing a list of shapes to be deleted among the one or more redundant shapes (pg. 286, column 1,3rd paragraph, lines 16-19); and an amendment target storage unit for storing a list of shapes to be amended (pg. 305, 2nd paragraph, lines 8-12); among the one or more redundant shapes; said deletion unit deletes shape information of the shapes to be deleted, and amends shape information of the shapes to be amended; and said construction unit reconstructs the three-dimensional model according to the amended shape information and. shape information of shapes other than the one or more redundant shapes.*

Claim 11: *The apparatus according to claim 10, wherein said deletion unit amends the shape information of the shapes to be amended according to at least one of vertex coordinate information (pg. 286, column 1, lines 18-25) and height information included in deleted shape information.*

Claim 12: *The apparatus according to claim 1, wherein said construction unit comprises a unit for amending arrangement reference information, as necessary, included in the remaining shape information, and reconstructs the (pg. 301,column 2, paragraph 3; figure 19; and pg. 290, column 1, 1 paragraph) three-dimensional model according to the amended arrangement reference information.*

Claim 13: *The apparatus according to claim 1, wherein said construction unit comprises a unit for generating a pseudo shape corresponding to arrangement reference information included in the remaining shape information, and reconstructs the three-dimensional model using the pseudo shape without (pg. 277, column 1, lines 10-17) amending the arrangement reference information.*

Claim 14: *A computer-readable storage medium storing a program used to direct a computer to perform: detecting one or more redundant shapes from a plurality of shapes forming a three-dimensional model of an object; deleting shape information relating to the one or more redundant shapes (pg. 291, column 2, paragraph 3;and pg. 292, columns 1,2 and figure 15); and reconstructing a three-dimensional model of the object according to remaining shape information.*

Claim 15: *A method of optimizing a model, comprising: automatically detecting one or more redundant shapes from a plurality of shapes forming a three-dimensional model of an object; automatically deleting shape information relating to the one or more redundant shapes (pg.301, column 2, 3rd paragraph;*

and pg. 291, column 2, 3rd paragraph lines 30-49); and automatically reconstructing a three-dimensional model of the object according to remaining shape information.

Claim 16: *A model optimization apparatus, comprising: detection means for detecting one or more redundant shapes from a plurality of shapes forming a three-dimensional model of an object (pg. 272, figure 4); deletion means for deleting shape information relating to the one or more redundant shapes; and construction means for reconstructing a three-dimensional model of the object according to remaining shape information.*

Claim Rejections - 35 USC § 103

9. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ji et al (Thesis: 1997) in view of Sekine et al (U.S. Patent 5,793,373 (1995)). Ji et al discloses various methodologies to overcoming integration barriers between design and process planning by CAD data design (abstract); but does not teach methods of deleting unnecessary portions of a surface.

Sekine teaches a method of generating and modifying shape data which fillet surface data capable of representing the complete shape of product, easily and accurately from the a surface model (column 2, lines 60-63); and deleting unnecessary portions from surfaces (column 12, lines 62-64).

One of ordinary skill in the art at the time of invention would have combined Ji's three-dimensional model with Sekine's method of eliminating unnecessary features of the combined shape, since it would have been obvious to delete residual shape data once the resultant 3-D shape was completed (column 12, lines 62-64).

Claim 2: *The apparatus according to claim 1, wherein: said detection unit detects an unnecessary shape (Sekine: column 12, lines 62-64) for an outline of the three-dimensional model (Ji: pg. 270, column 1,section 2.1, line 3) from the plurality of shapes; and said deletion unit deletes the shape information about the unnecessary shape.*

Correspondence Information

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tom Stevens whose telephone number is (703) 305-0365, Monday-Friday (8:00 am- 4:30 pm) or contact Supervisor Mr. Kevin Teska at (703) 305-9704.

13. Any inquires of general nature or relating to the status of this application should be directed to the Group receptionist whose phone number is (703) 305-3900.

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THS

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